

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A circuit simulation apparatus comprising:
a simulation executing unit which reads a circuit net list in which the connection descriptions of a circuit to be simulated are stored and which calculates the changes in the current and voltage of said circuit to be simulated, by referring to a transistor model, and
a diffusion-length-dependent parameter correcting unit which creates a corrected approximate expression regarding a diffusion-length-dependent parameter whose values change depending on ~~the~~ a diffusion length of a transistor for a transistor model created on the basis of transistors having a predetermined diffusion length and which calculates the correction value of said diffusion-length-dependent parameter for a transistor model having ~~a~~ the diffusion length different from that of said transistor model by using said corrected approximate expression,
wherein said transistor includes a source region and a drain region, and an isolation region surrounds said source region and drain region, and
wherein said diffusion length of said transistor is defined by a distance between boundaries of said isolation region in a direction from the source region to the drain region.
2. (Original) A circuit simulation apparatus according to Claim 1, wherein said diffusion-length-dependent parameter includes a threshold voltage parameter and a mobility parameter.
3. (Currently Amended) A circuit simulation apparatus according to Claim 2, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said threshold voltage parameter is a polynomial of ~~the~~ a reciprocal of diffusion length.
4. (Currently Amended) A circuit simulation apparatus according to Claim 2, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said threshold

voltage parameter includes a plurality of polynomials of the reciprocal of diffusion length, ~~selectively each of said plurality of polynomials~~ applied to one of a plurality of diffusion length ranges obtained by dividing ~~the~~ a range of diffusion length values by one or more predetermined approximate critical diffusion length values.

5. (Currently Amended) A circuit simulation apparatus according to Claim 2, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said mobility parameter is a polynomial of ~~the~~ a reciprocal of diffusion length.

6. (Currently Amended) A circuit simulation apparatus according to Claim 2, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said mobility parameter includes a plurality of polynomials of the reciprocal of diffusion length, ~~selectively each of said plurality of polynomials~~ applied to one of a plurality of diffusion length ranges obtained by dividing ~~the~~ a range of diffusion length values by one or more predetermined approximate critical diffusion length values.

7. (Currently Amended) A transistor model creating method comprising the steps of:
creating a transistor model on the basis of the characteristics of a MOS transistor having a predetermined diffusion length,
extracting diffusion-length-dependent parameters for each of a plurality of MOS transistors having diffusion lengths different from said predetermined diffusion length and
creating approximate expressions representing ~~the~~ a diffusion length dependence of said diffusion-length-dependent parameters, and
calculating ~~the~~ correction values of said diffusion-length-dependent parameters of a transistor used for simulation by said approximate expressions and using said correction values instead of said diffusion-length-dependent parameter values of said transistor model on the basis of the characteristics of said MOS transistor having said predetermined diffusion length,
wherein said transistor includes a source region and a drain region, and an isolation region surrounds said source region and drain region, and

wherein said diffusion length of said transistor is defined by a distance between boundaries of said isolation region in a direction from the source region to the drain region.

8. (Original) A transistor model creating method according to Claim 7, wherein said diffusion-length-dependent parameter includes a threshold voltage parameter and a mobility parameter.

9. (Currently Amended) A transistor model creating method according to Claim 8, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said threshold voltage parameter is a polynomial of ~~the~~ a reciprocal of diffusion length.

10. (Currently Amended) A transistor model creating method according to Claim 8, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said threshold voltage parameter includes a plurality of polynomials of ~~the~~ a reciprocal of diffusion length, ~~selectively~~ each of said plurality of polynomials applied to one of a plurality of diffusion length ranges obtained by dividing ~~the~~ a range of diffusion length values by one or more predetermined approximate critical diffusion length values.

11. (Currently Amended) A transistor model creating method according to Claim 8, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said mobility parameter is a polynomial of ~~the~~ a reciprocal of diffusion length.

12. (Currently Amended) A transistor model creating method according to Claim 8, wherein the ~~diffusion-length-dependent~~ corrected approximate expression of said mobility parameter includes a plurality of polynomials of ~~the~~ a reciprocal of diffusion length, ~~selectively~~ each of said plurality of polynomials applied to one of a plurality of diffusion length ranges obtained by dividing ~~the~~ a range of diffusion length values by one or more predetermined approximate critical diffusion length values.